Triarthra Brachiata, a New Species of Rotifer, and Remarks on the Spines of the *Triarthradae*.

By Charles F. Rousselet, F.R.M.S.

(*Read October 18th*, 1901.)

Plate 8 (Lower Portion).

The genus *Triarthra* contains three well-marked species, which are distinguished chiefly by the length of their skipping spines relative to the body. *Triarthra longiseta* has a small body (130—175 $\mu = \frac{1}{200} - \frac{1}{150}$ in. in size) and very long spines, twice to four times the length of the body. A very long-spined variety, which often occurs in very large lakes, has been called var. *limnetica* by Dr. Zacharias, but it seems to me the variation is too slight even for a variety. *Triarthra mystacina* has a larger and stouter body (204 $\mu = \frac{1}{125}$ in. in size), with spines $1\frac{1}{2}$ to $1\frac{3}{4}$ times the length of the body; whilst the third species, *Triarthra brevispina*, is very small (size 102 $\mu = \frac{1}{250}$ in.) and has very small, narrow spines, only about one-quarter the length of the body in size.

Two other species which have been named are undoubtedly synonyms: *T. cornuta* Weisse being the same as *brevispina*, and *T. terminalis* Plate seems to be *longiseta*.

For some years past I have occasionally come across a small *Triarthra* which is different from any of the above species. It is slightly smaller in length and less broad than *brevispina*, thus appearing more elongated in shape, and has longer spines, $\frac{5}{8}$ths to $\frac{3}{4}$ths the length of the body, and which are moreover very broad and arm-like at the base, as will be seen from fig. 7, Pl. 8. From this peculiarity I have named this new species *T. brachiata*. The broad bases of the spines appear to encompass the body at

the shoulders, and seem hollow, but are not actuated by special muscles. When swimming the two lateral spines lie against the sides of the body, and the posterior spine is trailed behind; but when the head is retracted they all three spring out at right angles to the body—merely, as I think, by the pull exercised on the integument and by the pressure of the internal fluid. The posterior spine, it is then seen, is not quite terminal in position, but stands out on the ventral side a little above the base.

The shape of the body is cylindrical, slightly more than twice as long as broad, and truncate in front. The ciliary wreath is nearly circular, with a projecting lip on the ventral side. Two red eyes, set close together near the anterior surface of the head, are present. The rest of the anatomy is quite normal, and calls for no remark.

The male has not yet been seen, but a fertilised resting egg of characteristic *Triarthra* structure was seen, having a cellular annulus all round the longer axis (fig. 8).

Mr. F. R. Dixon-Nuttall has been good enough to draw fig. 7 for me from a mounted specimen, which, he thinks, is not so satisfactory as if he could have seen the living animal.

Size of body alone: 95 $\mu = \frac{1}{267}$ in., of spines 65 $\mu = \frac{1}{390}$ in., total length, including posterior spine: 156 $\mu = \frac{1}{164}$ in., found singly on Putney Common and in water received from the north of Ireland; rare.

A few remarks on the spines of *Triarthra* in general will not be out of place here. These more or less long, chitinous and stiff appendages have been called "skipping spines" by the various authors. I have not, however, observed that any real skipping or displacement is effected in these rotifers—such as undoubtedly takes place in *Polyarthra*—when the head is retracted and the spines fly out. These spines, it seems to me, are protective in quite a different way. I have often seen an *Asplanchna* trying to swallow *Triarthra longiseta* by suddenly dilating its pharynx and thus producing a sucking action, when *Triarthra* usually saves itself by promptly spreading out its long spines. Sometimes, however, the attack is renewed from an unexpected quarter, and occasionally *Asplanchna* succeeds in sucking in its

victim, and *Triarthra* can then be seen in its enemy's stomach, with the long spines protruding through the oesophagus and mouth. *Triarthra* cannot therefore escape its enemies by flight, but rather by rendering itself unapproachable and impregnable, much in the same way as the porcupine and hedgehog, and it is evident that the longer the spines the greater is the protection they afford. It is ludicrous to see little *Triarthra brevispina*, with its tiny spines, act exactly like the long-spined species, though its small spines cannot be of much use when *Asplanchna* is the enemy.

The greatest enemy to all species of *Triarthra* is undoubtedly the surface-film of the water, for though these creatures live in the water, the surface of their bodies and spines is strongly water-repellent. The moment any of these animals touch the surface-film they adhere there so firmly that no efforts of theirs can disengage them, and they must perish. The same is the case with a good many other rotifers, particularly *Polyarthra*, *Anuraea longispina*, *Pedalion*, and *Mastigocerca*, and also with some Cladocera, such as *Bosmina*. Sometimes I collect very large numbers of *Triarthra longiseta* and *T. mystacina*, and after keeping these a few days in a small aquarium, the surface-film is covered by quite a layer of their dead bodies.

Explanation of Plate 8 (Lower Portion).

Fig. 7. *Triarthra brachiata*, n. sp. ♀, ventral view, × 370.
„ 8. „ „ resting egg × 300.